

52

SPLIT

DART AEROSPACE LTD	Work Order:	19666A
Description: Fwd Crosstube	Part Number:	D2889
Drawing: D2889 Rev. B; D6005 Rev. A	Qty:	19/10
		Page 1 of 2

Step	Location	Procedure	By	Date	Qty
1	DC	Issue Traveller Dwg. not required RF 02.11.05	KJ	03.09.19	19
2	PG	Issue P/O: 700518 a) Extrude as per Dwg D6005 length = 180" (Ref. D6005-180) b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11) Seamless aluminum tube c) Minimum ultimate tensile strength = 77ksi d) Minimum tensile yield strength = 66ksi e) Material certification required		03.09.22	19
3	RG	Receive and inspect for transit damage Ensure material certification attached	Q	04.01.05	22
4	QC6	Inspect dimensions as per Dwg D6005 and check 180" length	AB	01.02.11	22 PTO
5	FP	Acid etch and alodine as per QSI 005 4.1 Inside and outside of tube	2	07.02.11	22
6	LG	Bend as per Dwg D2889 and Folio FT001 Sign Page 2			
7	QC6	Inspect dimensions per Dwg D2889 Sign Page 2			
8	LG	Deburr and Polish Sign Page 2	N/A	Now ADDED	9 MARCH
9	FP	Acid etch and alodine as per QSI 005 4.1 Inside and outside of tube Sign Page 2	7B		
10	QC5	Inspect work to Step 9 Sign Page 2			
11	ST	Identify and stock	h	05.04.27	10
12	AC	Cost / part: 644.52		545.05.04.28	10
13	DC	Close W/O 644.52 Inspect Level 21	KJ	05.04.29	10

Rev	Date	Change	Revised By	Approved
A	99.05.31	New Issue, ECN 200	DM	
B	00.04.11	Remove Painting step	EC	
C	02.10.18	Re-format; Added spec	KJ	RF

RELEASED  
02/10/13 RF

Work Order:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Manuf / Design Mgr	Approval QC Inspector

NCR		WORK ORDER NON-COMFORMANCE							
DATE	STEP	Description of NC Section A		Corrective Action Section B		Sign & Date	Verification Section C	Approval Design Mgr	Approval QC Inspector
04.02.11	61	Dimensions should be Ø 2.750 OD Ø 2.000 ID 0.375 WALL	Actual dimensions Ø 2.741 OD Ø 2.000 ID WALL	Initial	acceptable OD only 0.003" out of tolerance used on Extended gear find x tubes. - OK.	04.02.11	04.02.11	04.02.11	04.02.11
		Variance between 0.375" and 0.361"			(per D6005, OD is $\pm 0.006$ wall is $\pm 0.015$ )				
	6	TUBE IS overlong		SCRAP		04.05.11	N/A	04.05.11	

PAR#: \_\_\_\_\_ Fault Category: \_\_\_\_\_ DQA: \_\_\_\_\_ Date: \_\_\_\_\_

DART AEROSPACE LTD		Work Order:	19666
Description: Fwd Crosstube		Part Number:	D2889
Drawing: D2889 Rev. B; D6005 Rev. A		Qty:	19
		Page 2 of 2	

W/O Step	A	B	C	D	E	F	G	H	I	J	K	L
6	OP 04.05.11	EP 04.05.11	DP 04.05.11	DP 04.11.12	DP 04.04.11	DP 05.23.10	DP 05.33.11	DP 05.03.11				
7	SCRAP #1 04.05.11	# 04.05.11	# 04.05.11	DP 04.11.12	EP 04.11.12	# 05.03.02	# 05.03.03	# 05.03.28				
8	SCRAP #1											
9	SCRAP #1											
10												

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~~178~~

{ Save #D for D705-596-101  
EP - SPAN is 119.125" angles 51°, 57°  
04.11.12

RELEASED  
02/10/30 RF

## Job Costing Report

Dart Aerospace Ltd.  
HawkesburySep 19, 2003  
01:10 pm

Work Order No : 0019666  
 Project Name : D2889  
 Project For : WK352  
 Work Order Type : Main  
 Main WO Number :  
 House Part Number : D2889  
 Description : FWD Crosstube  
 Manufactured : Yes  
 Amount Req'd : 19  
 Amount Done : 0  
 Start Date : 09-19-03  
 Est Finish Date : 12-22-03  
 Act Finish Date :  
 Drawings Reqd : No  
 Ok for Approval :  
 Approval Rec'd :  
 Department Code:  
 Burden Flags : NNNNNNN  
 WO Status : Open  
 Invoice State : Not Invoiced  
 Invoice Date :  
 Invoice Number :  
 Invoice Amount : 0.00  
 Order Entry No :  
 OE Value : 0.00  
 Est Margin : 0.000%  
 Actual Margin : 0.000%  
 \$0 Posted to Finished Goods

	Estimated	Actual	Var. %	Posted	To Post
Material Cost :	0.00	0.00	0.00	0.00	0.00
Engineering Hours :	0.00	0.00	0.00		
Engineering Cost :	0.00	0.00	0.00	0.00	0.00
Production Hours :	0.00	0.00	0.00		
Production Cost :	0.00	0.00	0.00	0.00	0.00
Testing Hours :	0.00	0.00	0.00		
Testing Cost :	0.00	0.00	0.00	0.00	0.00
OverHead Hours :	0.00	0.00	0.00		
OverHead Cost :	0.00	0.00	0.00	0.00	0.00
SubContract Hours :	0.00	0.00	0.00		
SubContract :	0.00	0.00	0.00	0.00	0.00
Misc. Hours :	0.00	0.00	0.00		
Misc. :	0.00	0.00	0.00	0.00	0.00
Burden :	0.00	0.00	0.00		
Total Cost :	0.00	0.00	0.00		
Margin :	0.000	0.000			
Selling Cost :	0.00	0.00			

	Estimated	Actual
Labour Hrs/Amount Done :	0.00	0.00
Profits/ (Loss) :	0.00	0.00

## Abnahmeprüfbescheinigung 3.1 B - EN 10204

Inspection Certificate 3.1 B - EN 10204 | Certificat de Reception 3.1 B - EN 10204

<b>Kunde:</b>	Dart Aerospace Ltd.	<b>Zeugnisnummer:</b>	
<i>Client:</i>	1270 Aberdeen Street K6A1K7 Hawkesbury, ON Canada	<i>Cert No.: / No. du certificat:</i>	2005668
<b>Produkt:</b>	Tubes seamless extruded	<b>Bestellnummer:</b>	Order No. / No. de commande
<i>Product / Produit:</i>	QQA 200/11e, Tol. Acc to ASTM B 210	<b>Auftrag:</b>	6438/1
<b>Spezifikation:</b>		<i>Our Reference/Notre Reference:</i>	
<i>Specification:</i>			
<b>Werkstoff:</b>	7075	<b>Zustand:</b>	T 6511
<i>Alloy/Alliage:</i>		<i>Temper/État</i>	
<b>Abmessung</b> <i>Size / Dimension</i>	69,850 mm x 50,790 mm x 9,530 mm x 4572,00 mm Article D6005-180 2.750" x 0.375"		
<b>Kennzeichnung</b> <i>Marking/Marquage:</i>	Cert No.405/03-AWU-7075-T6511-Cast No.1049-QQA-200/11E-2.750"OD X0.375"Wall-Heat No.2974-Lot6438-1-1 P.O.2005668		
<b>Lieferung:</b> <i>Delivered Material / Matériel délivré:</i>	pcs. 22	lbs 1120	
<b>1. Chemische Analyse</b>		<b>Chemical Analysis / analyse chimique</b>	
Charge/ Cast No.	min. max.	Si Fe Cu Mn Mg Cr Zn Ti Pb Zr Bi Sn Ni	
1049/03	0,40 0,239	1,2 2,0 0,30 0,057 2,372 0,192 5,683 0,037 0,004 0,0153 0,0001 0,0013 0,0030	
<b>Hydrogen content:</b>		<b>ccm/100 g Al</b>	

Elemente ohne Angabe &lt; 0,01 % / Elements without indication &lt; 0,01 %

## 2. Mechanische Eigenschaften

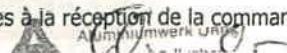
Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) Ksi	yield (Rp0,2) Ksi	elongation 2" %	elongation A %	Hardness HB	
	min. max.	77,0	66,0			
1	84,825	78,155	9,0		146	
2	86,275	80,040	8,0		157	

**Ergebnis der Prüfungen:** Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

**Test results:** We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

**Resultats:** Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande



Aluminiumwerk Unna AG · Uelzener Weg 36 · D-59425 Unna

Dart Aerospace Ltd.  
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CDN Hawkesbury, ONT, K6A1K7

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fax +49 (0) 23 03-206- 116  
info@alu-unna.de  
www.alu-unna.de

page: 1  
date: 28.11.2003  
customer 40980

## delivery note

7620

your PO dated: 22.09.2003  
your PO No.: 2005668  
AWU PO: 6438

contact: Petra Eisenblätter  
Tel.: +(303) 755 5672  
Fax: +(303) 755 5936  
representative: CLAUS J. BETTER

CARRIER: Senator

Your VAT No.:  
AWU VAT No.: DE177869055

We supply acc. to our delivery terms and conditions:

item	quantity	unit	net	kgs
001	22,000	PC		

AWU article: 16538 / Customer article: D6005-180 2.750 x 0.375 x 180  
/Tariff no. 76082091

product: TUBES / seamless extruded / EN AW-7075 / round

condition: T 6511 / QQA 200/11E

outer diameter:	2,750 INCH Tol.	+0,012	-0,012
tol. for mean OD		+0,006	-0,006
inner diameter:	2,000 INCH		
wall thickness:	0,375 INCH Tol.	+0,037	-0,037
fixed length	180,000 INCH Tol.	+0,125	

test report acc. to EN 10204/3.1B / RM 531 / Rp0,2: 455

straightness 0,01 INCH / 1 FEET / RMS outer 25

tol. on quantity +10 % -10 %

2.750" OD 0.375" Wall, 180" lengths

Part Number D6005-180 crosstube

Surface Finish max. RMS 25

Tolerances per ASTM B210

Straightness 0.010" deviation /12" length

Outside surface: max. defects up to 0.005" (longitudinally)

Min. ultimate tensile strength 77 ksi

RECEIVED DEC 9 2003



ALUnna

Aluminiumwerk Unna AG · Uelzener Weg 36 · D-59425 Unna

Dart Aerospace Ltd.  
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info@alu-unna.de  
www.alu-unna.de

page: 1  
date: 28.11.2003  
customer 40980

## delivery note

7620

your PO dated: 22.09.2003  
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Fax: +(303) 755 5936  
representative: CLAUS J. BETTER

CARRIER: Senator

Your VAT No.:  
AWU VAT No.: DE177869055

We supply acc. to our delivery terms and conditions:

item	quantity	unit	net kgs
001	22,000	PC	

AWU article: 16538 / Customer article: D6005-180 2.750 x 0.375 x 180  
/ Tariff no. 76082091

product: TUBES / seamless extruded / EN AW-7075 / round  
condition: T 6511 / QQA 200/11E

outer diameter:	2,750 INCH Tol.	+0,012	-0,012
tol. for mean OD		+0,006	-0,006
inner diameter:	2,000 INCH		
wall thickness:	0,375 INCH Tol.	+0,037	-0,037
fixed length	180,000 INCH Tol.	+0,125	

test report acc. to EN 10204/3.1B / RM 531 / Rp0,2: 455  
straightness 0,01 INCH / 1 FEET / RMS outer 25

tol. on quantity +10 % -10 %

2.750" OD 0.375" Wall, 180" lengths

Part Number D6005-180 crosstube

Surface Finish max. RMS 25

Tolerances per ASTM B210

Straightness 0.010" deviation /12" length

Outside surface: max. defects up to 0.005" (longitudinally)

Min. ultimate tensile strength 77 ksi



**ELMWOOD AIRCRAFT SPACE LTD****SPLIT**

		Work Order:	19665
<b>Description:</b> Alt Crosstube		Part Number:	D2890
<b>Drawing:</b> D2890 Rev. B; D6008 Rev. A		Qty:	2 <del>74</del>

Page 1 of 2

Step	Location	Procedure	By	Date	Qty
1	DC	Issue Traveller Dwg. not required RF 02.11.05	RF	03.09.19	14
2	PG	Issue P/O: 20054608 a) Extrude as per Dwg D6008 length = 180" (Ref. D6008-180) b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11) ) Seamless aluminum tube c) Minimum ultimate tensile strength = 77ksi d) Minimum tensile yield strength = 66ksi e) Material certification required			
3	RG	Receive and inspect for transit damage Ensure material certification attached	RF	03.09.22	14
4	QC6	Inspect dimensions as per Dwg D6008 and check 180" length	RF	04.01.05	16
5	FP	Acid etch and alodine as per QSI 005 4.1 Inside and outside of tube	RF	04.01.13	16
6	LG	Bend as per Dwg D2890 and Folio FT002 Sign Page 2	RF	04.11.26	2
7	QC6	Inspect dimensions per Dwg D2890 Sign Page 2	SEE PAGE 2 ✓		
8	LG	Deburr and Polish Sign Page 2	RF	04.11.26	2
9	FP	Acid etch and alodine as per QSI 005 4.1 Inside and outside of tube Sign Page 2	RF	04.11.26	2
10	QC5	Inspect work to Step 9 Sign Page 2			
11	ST	Identify and stock	RF	04.11.26	2
12	AC	Cost / part: 831.98	545	05.01.31	2
13	DC	Close W/O 90231 Inspect Level 21	RF	05.04.29	2

Rev	Date	Change	Revised By	Approved
A	99.05.31	New Issue, ECN 200	DM	
B	00.04.11	Remove painting step	EC	
C	02.10.18	Re-format; Added spec	KJ RF	RF

Step 10 DS

RELEASED  
02/10/30 RF

DART AEROSPACE LTD	Work Order:	19665
Description: Aft Crosstube	Part Number:	D2890
Drawing: D2890 Rev. B; D6008 Rev. A	Qty:	14

Page 2 of 2

W/O Step	A	B	C	D	E	F	G	H	I	J	K	L
6	DP 04-11-18	DP 04-11-18	DP 04-11-18									
7	DP 04-11-18	DP 04-11-18										
8	DP BE 04-11-18	DP BE 04-11-18										
9	DP 04-11-26	DP 04-11-26	DP 04-11-26									
10												

RELEASED  
02/10/20 RF